

Non-Intersectivity in Manner Adjectives*

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Abstract

This paper examines a class of adjectival modifiers that includes such adjectives as *skillful*, *careful*, *good*, *active*, etc., which have been traditionally analyzed as non-intersective, intensional modifiers, based on the substitution failure test. The paper provides arguments against the intensional analysis of these adjectives and further develops an alternative account in terms of manner modification of events proposed by Larson (1998), according to which an event argument is present in the semantic structure of nouns modified by adjectives of this type. Furthermore, it suggests that the event variable is bound by a generic quantifier in this case, which accounts for the restrictions on the type of eventualities that these adjectives can take as arguments.

1 Introduction: Substitution Failure

It has long been recognized that the part of speech “Adjective” in English is semantically not uniform and not all English adjectives can be given an extensional analysis in terms of properties of individuals. This has usually been demonstrated using entailment patterns and the possibility of substitution with co-extensional terms. As to the former, not all adjectives license both the *NP is an N* and *NP is Adj* entailments from *NP is an Adj N*, as, e. g., *married* does:

* This text was written as far back as 2009/2010 and thus contains ideas that I no longer believe in or that have been developed further since. However, a revision of this paper would have meant to write a new paper, therefore I decided to leave it basically unchanged, except for some minor corrections.

- (1) Peter is a married engineer.
 (a) \models Peter is an engineer.
 (b) \models Peter is married.

An analogous pair of entailments cannot be drawn, for instance, for *electrical*, simply because (2b) is ungrammatical:

- (2) Peter is an electrical engineer.
 (a) \models Peter is an engineer.
 (b) $\not\models$ *Peter is electrical.

If being electrical were a property of Peter ascribed independently of his property of being an engineer, as it is the case with being married, *electrical* should be able to occur predicatively.

Furthermore, an analysis of all adjectives in English as properties of individuals is not able to account for the following fact of substitution failure with co-extensional terms, observed at least as early as in Parsons (1968):

- (3) (a) Francis is a skillful surgeon.
 (b) Francis is a violinist.
 —————
 (c) $\not\models$ Francis is a skillful violinist.

The reason for the lack of implication in (3) is intuitively clear: Being skillful means quite different things for a surgeon, a violinist, a driver, etc. Thus, the meaning variability arises due to attribution of skillfulness to different activities, for skillful with respect to making a surgery implies something else than skillful with respect to playing the violin. Yet, postulating different meanings for *skillful* would be certainly an inelegant and inadequate solution that would vastly over-complicate the lexicon. A more adequate solution may be found on the level of semantic composition.

Note that the entailment patterns alone would not attest *skillful* as a problematic case for the property of individuals analysis, since Francis' being a skillful surgeon seems to entail Francis' being skillful. However, the substitution failure in (3) suggests that this is not quite right; rather, the sentence in (3a) entails that Francis is skillful with respect to his being a surgeon, but not skillful *simpliciter*.

In fact, the substitution failure test played a central role in early semantic theories of adjectives as an argument for an intensional analysis. I will show, however, that the lack of substitutivity may have different reasons and thus cannot be used as an unequivocal indicator for a single semantic phenomenon, such as intensionality, for instance. In this paper, I will focus on one semantic phenomenon that gives rise to substitution failure and is associated with adjectives like *skillful*, *careful*, *good*, *active*, etc., which I refer to as *manner adjectives* throughout the paper. I will argue that substitution failure with manner adjectives is due to the presence of a hidden event argument in the logical form that they are predicated of.

The structure of the paper is as follows. Section 2 outlines Siegel's (1976) intensional analysis and discusses its drawbacks. Section 3 shows that substitution failure may have different reasons, all of which can be explained in terms of hidden relationality, including the case of manner adjectives. Section 4 provides a formal semantic analysis of manner adjectives as predicates of events and suggests that the event variable is bound by a generic quantifier in this case, which accounts for the restrictions on the type of eventualities that can be modified by manner adjectives. Finally, Section 5 contains some concluding remarks and considerations regarding future work.

2 Previous Analyses: Modification of Intensions

2.1 Siegel's (1976) Doublet Theory

In early formal semantic approaches, in particular, in the *Doublet Theory* developed by Siegel (1976), the entailment and substitution failure data have been interpreted as reflecting a semantic type ambiguity within the word class of adjectives. On the one hand, Siegel's classification distinguishes adjectives like *male*, *aged*, *nude*, *blond*, *tall*, *married*, etc. that are given an extensional analysis as properties of individuals (of type $\langle e, t \rangle$ extensionally), for which a conjunction account illustrated in (4) holds:

$$(4) \quad \llbracket \text{male nurse} \rrbracket = \lambda x. [\text{male}(x) \ \& \ \text{nurse}(x)]$$

Siegel establishes the term “intersective” for this type of adjectives, since the semantic composition of such adjectives with nouns can be characterized in terms of an intersection of their extensions.

On the other hand, *electrical* in (2) and *skillful* in (3) are examples of “non-intersective” adjectives, along with *good*, *careful*, *medical*, *former*, *alleged*, *potential*, etc. The conjunction account cannot be true of them: The entailment and substitution failure data speak against it. In terms of sets, these adjectives are subsective, rather than intersective, since the extension of an NP containing an adjective of this type is a subset of the extension of its head noun.

Siegel analyzes adjectives like *electrical* and *skillful* as intensional modifiers, which operate on the intensions rather than the extensions of predicates (extensionally they are thus properties of properties, type $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$):

$$(5) \quad \llbracket \text{skillful surgeon} \rrbracket = \lambda x. [\text{skillful}(\text{surgeon})](x)$$

Thus, Siegel accounts for substitution failure with non-intersective adjectives by appealing to intensionality: Applied to different intensions, they do not necessarily give the same value.

2.2 Arguments Against the Intensional Analysis

Siegel’s analysis of adjectives faces a number of problems, which suggest that it provides a too course-grained classification of adjectives and, at the same time, makes too strong predictions. In what follows, I will briefly discuss these problems.

2.2.1 Heterogeneity in Non-Intersective Adjectives

The distinction between intersective and non-intersective adjectives appears to be not differentiated enough, since it neglects obvious semantic and syntactic differences within the class of non-intersective adjectives. First, they reveal quite different entailment patterns, as summarized below:

(6)	NP is a <i>musical</i> N	NP is a <i>skillful</i> N	NP is an <i>alleged</i> N
	\models NP is an N	\models NP is an N	$\not\models$ NP is an N
	$\not\models$ *NP is musical	$\not\models$ NP is skillful	$\not\models$ *NP is alleged

In order to account for these differences, Siegel formulates meaning postulates which ensure correct entailments. For instance, the meaning postulate in (7) guarantees the subsectivity entailments that can be drawn from *electrical engineer* in (2). Similarly, another meaning postulate is needed for the so-called “privative”

adjectives, like *alleged* and *former*, which license neither the entailment *NP is an Adj*, nor the entailment *NP is an N*. This introduces a diversity into the class of non-intersective adjectives, but the semantic motivation for it is missing.

$$(7) \quad \Box[[\alpha(\beta)](u) \rightarrow \beta(u)]$$

Relatedly, different non-intersective adjectives can have different syntactic distributions. For example, whereas *skillful* can be used both attributively and predicatively, *medical* and *alleged* allow only for the attributive use:

- (8) (a) Ruth is a skillful nurse.
(b) This nurse is skillful.
- (9) (a) Robert is a medical assistant.
(b) *This assistant is medical.
- (10) (a) Oswald is the alleged murderer of Kennedy.
(b) *This murderer is alleged.

Intuitively, these distributional and entailment facts hint at semantic differences among non-intersective adjectives that are not reflected in Siegel's classification. I assume that the semantic heterogeneity of non-intersective adjectives is a result of the fact that substitution failure, which is used as the main method to attest (non-)intersectivity in Siegel's analysis, may have different reasons. We will see in Section 3 that a number of semantic phenomena can trigger substitution failure.

More generally, the content of the notion of non-intersectivity is not very specific. It is used in the first instance to say what certain predicates *are not*, namely, that they are not properties of individuals, rather than to explain what they *are*. The idea that they modify intensions does not say much about their semantics, as the exact mechanism of this modification is not specified in detail. Furthermore, the diversity within the class of non-intersective adjectives suggests that there may be more than one mechanism of non-intersective modification.

Finally, the simple version of intersectivity, which is assumed by Siegel (and, in fact, many others), is not unproblematic either. According to it, an intersective adjective is just a one-place predicate which applies to an individual independently of the predicate denoted by the head noun. This view on adjectival modification

implies that there may be no semantic influence of the modified noun on the adjective (or the other way around). However, this appears not to be quite the case. The meaning variation in the adjectives in such examples as *male dentist* / *male suit*, *nude person* / *nude rock*, *red tomato* / *red hair* / *red wine* / *red face* suggests that the simple version of the conjunctive account does not work as neatly as assumed even for what is usually taken as paramount examples of intersective adjectives. A critical discussion of the notion of intersectivity is, however, outside the scope of this paper; more on this issue can be found, e.g., in Lahav (1989) and Bosch (1995).

2.2.2 Modification Beyond Intentions

The idea of intensional modification arose from the consideration that certain adjectives cannot denote semantically independent properties of individuals and that the first candidate they most obviously depend on is the semantics of their head nouns. There is however some evidence that the semantic dependence of non-intersective adjectives goes beyond their dependence on the meaning of the modified nouns.

First, some non-intersective adjectives can modify what Bolinger (1967) called “semantically bare nouns”, such as *woman*, *person*, or *guy*:¹

- (11) (a) Benjamin is clearly an experienced guy.
(b) Not always will the most skillful person win.

Obviously, *experienced* and *skillful* in (11) mean ‘experienced / skillful with respect to some activity’; these activities are however not recoverable from the intentions of the nouns *guy* and *person*. In this connection, Siegel (1976) suggests that adjectives like *experienced* and *skillful* are ambiguous between an intersective and a non-intersective reading and that their occurrences with semantically bare nouns, as in (11), are intersective. Moreover, she assumes that, in fact, the majority of English adjectives are “doublets”, i.e., have two distinct lexical entries for the intersective and the non-intersective variant. It is unclear, however, how *experienced* and *skillful* can be intersective in (11) if they mean ‘experienced / skillful *with respect to* something’.

¹ Note, however, that not all non-intersective adjectives can modify such nouns; for instance, *medical* and *alleged* cannot. This is yet another manifestation of heterogeneity among non-intersective adjectives.

Some adjectives seem to be in fact good candidates for cases of ambiguity; see, for instance, the contrast between *criminal* in (12a) and (12b), where the meaning difference is quite obvious and the entailments are different. Yet, it is questionable that the majority of English adjectives are ambiguous in this sense. There just seems to be little difference in meaning between *skillful* when applied to *surgeon*, as in (3), and *skillful* when applied to *person*, as in (11), that would justify such a complication of the lexicon.

- (12) (a) A criminal lawyer has studied the aspects of criminal law.
(b) A criminal policeman engaged in a stitch-up cannot hide now so well as before.

Second, Hare (1957), Sampson (1970), and Beesley (1982), among others, showed that non-intersective modification cannot be tied to the meaning of the modified nouns, because context can always suggest a different interpretation. For instance, in the context of a chess school that specializes in teaching musicians, *skillful violinist* in (13) will be interpreted relative to playing chess, rather than relative to playing the violin (cf. Beesley 1982: 221):

- (13) A: How are your new students?
B: I've got some very skillful violinists.

Such examples clearly demonstrate that non-intersective modification cannot be reduced to the modification of noun intensions, although the *default* interpretation of adjectives like *skillful* may in fact be relative to the meaning of their head nouns.

3 Reasons for Substitution Failure

As discussed in Section 2.2.1 above, one of the problems with Siegel's account is the semantic diversity of adjectives falling under the label of non-intersective modifiers. It has been suggested that this diversity results from the fact that substitution failure, which is used by Siegel to attest adjectives as intersective or non-intersective, can be triggered by different factors. This section discusses some of such factors. Note that the classes of adjectives associated with these factors cut across the intersective/non-intersective distinction, since the adjectives

discussed in Sections 3.1 and 3.2 are intersective according to Siegel, while those in Sections 3.3 and 3.4 are non-intersective.

3.1 Gradable Adjectives

The following example from Partee (1995) demonstrates that substitution failure can occur with gradable adjectives, such as *tall* and *expensive*:

- (14) (a) Win is a tall 14-year-old.
 (b) Win is a basketball player.
 (c) \nVdash Win is a tall basketball player.

However, the reason of substitution failure in this case is generally assumed not to be intensionality, but rather the fact that the semantics of gradable adjectives depends on a *standard of comparison*, which is calculated with respect to a relevant *comparison class* (cf., e.g., Cresswell 1976, Klein 1980, von Stechow 1984, Bierwisch 1989, Kennedy & McNally 2005, Kennedy 2007).² More specifically, it is a change in the standard of comparison for the set of individuals denoted by the head noun that can give rise to substitution failure with gradable adjectives.

For instance, in Partee's example above, the class of basketball players introduces a specific standard of comparison for tallness which is different (higher) from the standard of tallness for 14-year-olds. Being a tall 14-year-old thus does not imply being a tall basketball player because one has to be significantly taller than an average teenager and even an average adult in order to be attested as a tall basketball player. In other words, one's height can be above the standard of tallness for 14-year-olds, but still below the standard of tallness for basketball players, as shown formally in (15) on a degree-based approach to the semantics of gradable adjectives in the spirit of Kennedy (2007).

- (15) (a) **14-year-old(win)** & $\exists d [\mathbf{tall}(\mathbf{win}) = d \ \& \ d \geq \mathbf{d}_s^{14}]$
 (b) **basketball-player(win)**
 (c) $\mathbf{d}_s^{bp} > \mathbf{d}_s^{14}$

² This view is also adopted by Siegel (1976), who assumes that gradable adjectives are intersective and thus has to accept the fact that substitution failure cannot be used as an unequivocal test for non-intersectivity.

$$(d) \not\models \text{basketball-player}(\text{win}) \ \& \ \exists d [\text{tall}(\text{win}) = d \ \& \ d \geq d_s^{bp}]$$

This analysis of substitution failure with *tall* in (14) predicts that substitution failure will not occur in the inverse direction, that is, that the implication from a higher standard to a lower one should be valid. This prediction is, of course, borne out, as (16) demonstrates.

- (16) (a) Win is a tall basketball player.
 (b) Win is a 14-year-old.

- (c) \models Win is a tall 14-year-old.

Note that the fact that substitution failure with gradable adjectives occurs only in one direction distinguishes them from manner adjectives such as *skillful*, with which implications in both directions do not hold; for instance, neither the substitution in (3) nor the inverse one are valid. This suggests that substitution failure with manner adjectives cannot be due merely to changes in the standards of comparison for different comparison classes.

3.2 Color and Material Adjectives

Adjectives that denote colors and materials, such as *red* or *wooden*, are often regarded as typical instances of intersective adjectives. Interestingly, they can nevertheless give rise to substitution failure, as, e. g., in the following example:

- (17) (a) This object is a red grapefruit.
 (b) This object is a juggling ball.

- (c) $\not\models$ This object is a red juggling ball.

Although the example in (17) is somewhat artificial (in general, it appears not to be easy to construct natural examples of this sort with color and material adjectives), the logic of substitution of co-extensional terms seems to be preserved in it. Intuitively, substitution failure has little to do with intensionality in this case; rather, it originates from the fact that a color or material property can be attributed to an object as a whole, while being true only of a relevant part of it. Thus, *red pen* is true of a pen even if only its external part or only its internal

part (i.e., the ink) is red and *glass table* is true of a table even if its legs are made out of metal – important is that it has a glass plate. And since it usually remains implicit which part is relevant in such cases, reference to the object as a whole may imply a switch between different relevant parts of it and this, in turn, will lead to substitution failure, like in (17). The implicit ascription of redness only to certain relevant parts of the same object in this example, namely, to the internal part when it is conceptualized as a grapefruit and to the surface when it is conceptualized as a juggling ball, can thus be formalized as follows:³

- (18) (a) **grapefruit(this-object) & $\exists x$ [inside-part(x)(this-object) & red(x)]**
 (b) **juggling-ball(this-object)**

 (c) **\nVdash juggling-ball(this-object) & $\exists x$ [outside-part(x)(this-object) & red(x)]**

If the semantic representation of (17) is as given in (18), the non-validity of this implication is explained without appeal to intensionality, namely, as being due to the presence of an implicit parameter, relative to which the adjectival property is predicated.

3.3 Relational Adjectives

Also relational adjectives, such as *electrical* and *medical*, are able to trigger substitution failure, as can be shown with the following example. Imagine that Carl is a young man produced during the early days of in vitro fertilization and, as such, is a medical miracle; besides, he is a student of architecture.⁴ In this context we have:

- (19) (a) Carl is a medical miracle.
 (b) Carl is a student.

 (c) **\nVdash Carl is a medical student.**

³ Which part of an object is relevant is probably a matter of world knowledge in some cases and can be inferred from the context of utterance in some others.

⁴ I am indebted to Muffy Siegel, who suggested me a slightly different version of this example.

Naturally, the fact that Carl is a medical miracle as well as a student does not imply that he is a medical student. According to Siegel, the reason for this lack of implication is that adjectives like *medical* are non-intersective intensional modifiers. But there is also an alternative analysis of such denominal relational adjectives, according to which the semantic structure of a relational adjective contains the predicate denoted by its base noun (i. e., the noun it is derived from) and a relational predicate that links the internal argument of the base noun and the internal argument of the noun modified by this adjective (cf., e. g., Mezhevich 2002, Fradin 2008). Hence, under this analysis, the non-validity of the implication in (19) is due to a change in the implicit relation; specifically, the fact that Carl is a miracle *produced* by medicine does not imply that he *studies* medicine:

- (20) (a) **miracle(carl)** & $\exists x [\mathbf{R}^{prod}(\mathbf{carl})(x) \& \mathbf{medicine}(x)]$
 (b) **student(carl)**

 (c) $\nVdash \mathbf{student}(\mathbf{carl}) \& \exists x [\mathbf{R}^{stud}(x)(\mathbf{carl}) \& \mathbf{medicine}(x)]$

Thus, also in the case of relational adjectives, intensionality is not the only possible explanation of substitution failure; it can as well be explained by the presence of an implicit relation.

3.4 Manner Adjectives

What the analyses of substitution failure with gradable, color/material, and relational adjectives discussed in Sections 3.1–3.3 have in common is the assumption about the presence of a hidden parameter in the semantic structure: a standard of comparison, a relevant part, or an additional relation. Accordingly, substitution failure occurs if there is an implicit change in this parameter. Similarly, also substitution failure with manner adjectives like *skillful*, cf. (3), can be accounted for as a result of a change in a hidden parameter, rather than as a matter of intensionality, given that there are reasons to assume that there is some hidden parameter in this case as well. Section 4.1 below shows that there are indeed reasons to assume an additional parameter to be present in the semantic structure of nouns modified by manner adjectives, namely, a Davidsonian *event argument* (see also McConnell-Ginet 1982, Larson 1998, for arguments to this extent).

4 Event-Based Analysis of Manner Adjectives

4.1 Presence of Event Arguments

There are several pieces of data that speak in favor of an event-based analysis of manner adjectives.⁵ First, NPs containing manner adjectives can be paraphrased in terms of verbal structures with manner adverbs, as is pointed out already in Vendler (1968), cf. the examples below.

- (21) (a) Peter is a careful driver.
 (b) ~ Peter drives carefully.
- (22) (a) David is a just king.
 (b) ~ David rules justly.

When the manner adjective is interpreted relative to the meaning of the noun it modifies, the verb in such paraphrases is related to the modified noun morphologically, like in (21), or at least semantically, like in (22). By contrast, in cases when the relevant interpretation is suggested by the context, as in the example in (13) from Section 2.2.2, repeated in (23) below, the head noun of the manner adjective and the verb in the paraphrase can be completely unrelated semantically.

- (23) [*in a chess school for musicians*]
 A: How are your new students?
 B: I've got some very skillful violinists.
 ~ I've got some violinists who play chess very skillfully.

Crucially, the adverbs in such paraphrases are *manner adverbs*, which are standardly treated in event semantics as co-predicates of the event argument introduced by the verb (cf. Davidson 1967, Parsons 1990). Thus, in order to have a unified analysis of manner adverbs and manner adjectives, also the latter need to be analyzed as predicates of events. This would imply that an event argument is present in the semantic representation of phrases like *careful driver* and *just king*, being responsible for substitution failure with manner adjectives.

Note also that the possibility of manner adverbial paraphrases distinguishes manner adjectives both from intersective adjectives and from other types of non-

⁵ These data were not considered by Siegel (1976) and cannot be easily incorporated into her intentional theory.

intersective adjectives, which either do not have adverbial counterparts at all (**tally*), or whose adverbial counterparts are not manner adverbs (*medically*, *allegedly*), as the unavailability of the corresponding adverbials of the form *in a(n) ADJ way* demonstrates (**in a medical way*, **in an alleged way*).⁶

- (24) (a) Win is a tall basketball player.
(b) \nearrow **Win plays basketball in a tall way.*
- (25) (a) Robert is a medical assistant.
(b) \nearrow **Robert assists in a medical way.*
- (26) (a) Oswald is the alleged murderer of Kennedy.
(b) \nearrow **Oswald murdered Kennedy in an alleged way.*

Second, manner adjectives can modify event nominalizations, as the examples below show, which provides further evidence for an analysis of them as predicates of events.

- (27) (a) Peter's careful driving
(b) David's just rule

Since manner adjectives can normally be predicated both of DPs that denote individuals, as in (28a), and of DPs that denote events, e. g., DPs containing event nominalizations, as in (28b), it is not immediately clear if they should be analyzed as predicates of individuals or predicates of events.

- (28) David is a skillful violinist.
 - (a) David is skillful (w.r.t. playing the violin).
 - (b) David's violin playing is skillful.
 - (c) David plays the violin skillfully.

It should be pointed out in this connection, though, that in fact not all manner adjectives can be predicated of individual-denoting DPs, while all of them can be predicated of DPs denoting events, as is shown in (29) and (30) for *deep* and *lawful*.

⁶ For a discussion of different semantic classes of adverbs, see, e. g., Ernst (2002).

- (29) John is a deep sleeper.
- (a) *John is deep (w.r.t. sleeping).
 - (b) John's sleep is deep.
 - (c) John sleeps deeply.
- (30) John is a lawful owner of a Cadillac.
- (a) *John is lawful (w.r.t. owning a Cadillac).
 - (b) John's ownership of a Cadillac is lawful.
 - (c) John owns a Cadillac lawfully.

The contrast between (28), on the one hand, and (29)–(30), on the other hand, suggests that, while manner adjectives are event modifiers, the meaning of many of them “involves properties of an agent”, as Mittwoch (2005, p. 77) put it discussing a related case of manner adverbs, which allows such manner adjectives to be predicated of individual-denoting DPs, as in (28a).

Thus, in what follows, I will analyze manner adjectives as predicates of events, as has been suggested also by Larson (1998). In particular, Larson argued, first, that some nouns contain in their semantic structure both an individual and an event argument and, second, that adjectives can be predicated of the individual or of the event argument of nouns. He furthermore assumed that some adjectives, such as, e.g., *beautiful*, can be predicated of either argument, giving rise to an ambiguity represented in (31) below. The manner interpretation of *beautiful* is thus captured by the semantic representation in (31b).⁷

- (31) Olga is a beautiful dancer.
- (a) Qe [**dancing**(*e*,*olga*) ... **beautiful**(*olga*,*C*)] (“Olga is beautiful”)
 - (b) Qe [**dancing**(*e*,*olga*) ... **beautiful**(*e*,*C*)] (“Dancing is beautiful”)

Larson does not specify the event quantifier (and hence also the connective) in these semantic representations, but suggests that a natural candidate for it is a generic quantifier. Intuitively, this is right, as is evident from the fact that the verbs in the paraphrases in (21)–(23) above have a habitual interpretation. Indeed, sentences like that in (31) do not seem to allow a true episodic interpretation; if there is only one *actual* event of Olga's beautiful dancing, (31) can be true only

⁷ C in (31) represents the comparison class relative to which *beautiful* applies.

in case this single event is interpreted as an indication for a series of *potential* future events of her beautiful dancing (i. e., a generic interpretation with only one actual instantiation). Further, such sentences also do not seem to require a plain extensional universal interpretation, tolerating exceptions; not every single event of Olga's dancing must be beautiful for (31) to be true. Being a *modalized* universal quantifier (Krifka et al. 1995), the generic quantifier adequately captures these features. Section 4.2 will present some additional data which provide further evidence for the presence of a generic quantifier in the semantic structure of sentences like (31).

Given this analysis of modification by manner adjectives, substitution failure with them can be accounted for without reference to intensionality, namely, as being due to an implicit change in the modified event, as shown formally in (32) for the substitution failure in (3).⁸

- (32) (a) $\text{GENe} [\text{make-surgery}(\text{francis})(e)][\text{skillful}(e)]$
 (b) $\text{GENe} [\text{C}(\text{francis})(e)][\text{play-violin}(\text{francis})(e)]$
 (c) $\nVdash \text{GENe} [\text{play-violin}(\text{francis})(e)][\text{skillful}(e)]$

Larson (1998) assumes that sentences like that in (31) have one non-eventive and one eventive reading, formalized in (31a) and (31b), respectively. In fact, however, sentences of this type seem to have at least two distinct eventive interpretations, which becomes particularly apparent when the noun modified by the manner adjective is an *-er* nominalization. One of them, which I will refer to as the 'non-occupational' interpretation, corresponds to Larson's reading in (31b); its semantic representation for *Peter is a skillful teacher* is given below.

- (33) Peter is a skillful teacher. [non-occupational reading]
 $\text{GENe} [\text{teach}(\text{peter})(e)][\text{skillful}(e)]$
 'In contextually appropriate situations in which Peter teaches, he teaches skillfully.'

Importantly, the non-occupational interpretation in (33) does not imply that Peter is a teacher professionally, nor that he teaches habitually; it merely states

⁸ In this paper, I use the generic quantifier GEN, which is associated with a tripartite structure (cf., e. g., Krifka et al. 1995). However, see, e. g., Rimell (2004), Boneh & Doron (2008), who argue against GEN and propose instead the non-quantificational habitual operator HAB.

that, whenever he teaches, he does so skillfully, i. e., that he is skillful at teaching (e. g., when he helps someone with assignments).⁹ Thus, on this reading, *Peter is a skillful teacher* is equivalent to *Peter teaches skillfully*:

- (34) Peter teaches skillfully.
 $\text{GENE} [\text{teach}(\text{peter})(e)][\text{skillful}(e)]$

Yet sentences like *Peter is a skillful teacher* also have an ‘occupational’ interpretation, which is not discussed in Larson (1998). This reading does imply that Peter is a (professional) teacher or, at least, that he teaches habitually; this entailment is secured by an additional conjunct, as in the semantic representation below.

- (35) Peter is a skillful teacher. [occupational reading]
 $\text{GENE} [\text{C}(\text{peter})(e)][\text{teach}(\text{peter})(e)] \ \& \ \text{GENE}' [\text{R}(\text{peter})(e')][\text{skillful}(e')]$

An important difference between the occupational and the non-occupational readings is the fact that, unlike the latter, the former does not require the event modified by the manner adjective to come from the semantics of the modified noun; rather, the relevant event may also be provided contextually. Accordingly, the event predicate in (35) is left underspecified (**R**), such that it can be understood as, e. g., **play-chess** in a context of a chess school for teachers (see the discussion of example (13) in Section 2.2.2), even if its default value in most contexts is probably **teach**. Furthermore, the possibility to supply the relevant event predicate **R** contextually also accounts for the interpretations available to such sentences as in (11), in which manner adjectives modify semantically bare nouns like *person*, whose semantics can hardly suggest an event.

Finally, let us briefly discuss the interaction between manner modification and the availability of the occupational and the non-occupational readings. In the case of predicative nouns, the non-occupational reading emerges only in the presence of manner adjectives; the occupational reading is, by contrast, always available:

- (36) (a) Peter is a teacher. [occupational]
 (b) Peter is a skillful teacher. [occupational/non-occupational]

⁹ In this sense, the non-occupational reading is a version of the “Port-Royal Puzzle” (Leslie 2008, 16–17), which is otherwise usually constructed with bare plural subjects (cf. Carlson 1977).

Given the analysis above, the lack of the non-occupational reading with non-modified predicative nouns can be explained as follows. Since the predicate denoted by the noun specifies the restrictor of GEN on the non-occupational reading, cf. (33), in the absence of a manner adjective there would be no material to fill its nuclear scope.

The situation in the case of habitual verbs is similar. In addition to the occupational reading, which is available to such non-modified habitual verbs as *teach* or *drive the bus* (Lawler 1973), they also acquire a non-occupational reading when a manner adverb (or some other modifier) is present:

- (37) (a) Peter teaches. [occupational]
(b) Peter teaches skillfully. [occupational/non-occupational]

Like (36b), (37b) can be interpreted both occupationally and non-occupationally, even if its occupational reading might be less salient than in the non-modified version in (37a).

4.2 Restrictions on Event Types

According to the analysis presented in Section 4.1, manner adjectives are predicated of an event argument which is bound by a generic quantifier. Since GEN undergoes the Plurality Condition on quantification (cf., e. g., de Swart 1991), this analysis predicts that manner adjectives should be no good with nouns that contribute “once-only” predicates of events, i. e., predicates denoting singleton sets of events. This prediction is borne out, as we will see in what follows.

In most of the examples used so far, the underlying eventualities are activities, such as *drive*, *rule*, or *play the violin*, which do not prohibit a repetitive interpretation. Some of these examples are repeated below.

- (38) (a) Peter is a careful driver.
(b) David is a just king.
(c) John is a skillful violinist.

By contrast, manner adjectives seem not to be easily compatible with nouns that are derived from achievement and accomplishment verbs, as the following examples demonstrate.

- (39) (a) #John is a skillful inventor of an artificial language.
 (b) #John is a skillful discoverer of a continent.
- (40) (a) #John is a skillful painter of a landscape.
 (b) #John is a skillful designer of a theatre.

Yet, what is responsible for the oddness of the sentences in (39) and (40) is not the aspectual class of the base verbs itself (achievements/accomplishments), but the fact that these particular achievements and accomplishments are once-only predicates. The examples in (41)–(43) show that manner adjectives easily combine with nouns formed from achievements/accomplishments which can be repetitive – due to the presence of a bare plural or mass noun complement.

- (41) John is a skillful inventor of computer languages.
- (42) John is a skillful finder of water.
- (43) John is a skillful painter of landscapes.

If modification by manner adjectives is only possible when the modified event is repetitive, manner adjectives should be compatible with nouns derived from stage-level states (e. g., *sleep*, *hold*, *wait*, as well as Dowty's (1979) "interval statives" like *sit*, *stand*, *lie*), but not individual-level states, since the latter, unlike the former, are once-only predicates as well (de Swart 1991). This seems to be the case, as the examples below demonstrate:¹⁰

- (44) (a) John is a loud/sensitive sleeper.
 (b) John is a patient waiter.
- (45) (a) #John is a good owner of a Cadillac.
 (b) #John is a skillful lover of Mozart.

In fact, however, the infelicity of the sentences in (45) may have to do with agentivity, rather than with repetitiveness. Individual-level states are not agentive (differently from stage-level states, cf. Katz 2008), while manner adjectives like

¹⁰ The sentences in (45) possibly become slightly better if the states denoted by *own* and *love* are coerced to what Katz (2008) calls the "event-related" reading, that is, are interpreted as activities associated with these states. E. g., *a good owner of a Cadillac* may mean that the owner of the Cadillac treats it well, while *a skillful lover of Mozart* may be used for a musician who admires Mozart and hence skillfully performs his works.

good and *skillful* “involve properties of an agent”, as has been discussed in Section 4.1. In contrast, manner adjectives like *lawful*, whose meaning does not involve properties of an agent, can modify nouns that are derived from verbs denoting individual-level states:¹¹

- (46) (a) John is a lawful owner of this Cadillac.
(b) John is a hopeless lover of chocolate.

If manner modification implies repetitivity, it is not clear why manner adjectives like *lawful* can modify individual-level statives as in (46), which denote once-only predicates. Although an analysis of this fact is outside the scope of this paper, an explanation of it may possibly be given along the lines of Chierchia’s (1995) account of individual-level predicates as being inherently generic. In particular, individual-level statives may be assumed to introduce a generic quantifier of a special type, which is not pluractional, i. e., does not presuppose repetitivity.

5 Conclusion and Outlook

This paper presented arguments for an analysis of manner adjectives, such as *skillful* and *good*, as predicates of events introduced either in the semantics of the modified nouns or contextually. Furthermore, the event argument that manner adjectives are predicated of has been argued to be bound by a generic quantifier, which accounts for the restrictions on the type of events that can be modified by manner adjectives. To conclude, I will briefly discuss how this analysis relates to some other accounts proposed in the literature and point out directions for future research.

In knowledge representation, it is common to formalize generic events of the sort discussed in this paper as a special ontological type of *roles* (Guarino 1992, Sowa 2000, Steimann 2000, Masolo et al. 2005, Loebe 2007), and the same strategy is occasionally employed in semantics (cf., e. g., Croft 1984). Thus, using the

¹¹ In some cases, manner adjectives that involve properties of an agent *are* able to modify nouns with underlying individual-level states, as, e. g., in *Bill is a passionate admirer of Picasso’s art*. However, following Katz (2008), I assume that *passionate* in this example is not a manner modifier of a state. Rather, it is either a manner modifier of an activity associated with the state of admiration (the “event-related” reading), or a degree modifier that indicates *how much* Bill admires Picasso’s art and not *how* he admires it. Note that the latter reading is therefore unavailable with non-gradable states, as, e. g., in *David is a passionate owner of a Stradivarius*.

semantic type of roles, Croft represents the ambiguity of *beautiful dancer* as in (47); cf. Larson's (1998) semantic representation of this phrase in (31).

- (47) Marya is a beautiful dancer.
 (a) **dancer(marya) & $\exists r$ [beautiful(*r*,marya)]**
 (b) **dancer(marya) & beautiful(marya)**

This analysis may be seen as a formal implementation of an idea that goes back to Aristotle, who argued that an adjective like *good* modifies relative to the "function" of its argument, since someone can be a good man and a bad cobbler at the same time (*Sophistical Refutations*, 177b). Nouns can be then assumed to have an additional role argument that corresponds to Aristotelian functions. Accordingly, being good with respect to one role will not imply being good also with respect to some other role, which will account for substitution failure.

Roles seem to be indeed linguistically real, as they can be explicitly introduced by means of *as*-phrases, which can accompany manner adjectives, as in the examples below.

- (48) (a) Peter is a careful driver.
 (b) \sim Peter is careful as a driver.
 (49) (a) David is a just king.
 (b) \sim David is just as a king.
 (50) (a) John is a skillful violinist.
 (b) \sim John is skillful as a violinist.

Moreover, the ability to take such *as*-phrases appears to distinguish manner adjectives from intersective adjectives, as well as from some types of non-intersective adjectives, as the following examples demonstrate:

- (51) (a) Peter is a married engineer.
 (b) \nearrow *Peter is married as an engineer.
 (52) (a) Peter is an electrical engineer.
 (b) \nearrow *Peter is electrical as an engineer.
 (53) (a) Peter is a former engineer.
 (b) \nearrow *Peter is former as an engineer.

In fact, however, manner adjectives are not the only variety of adjectives that can take such *as*-phrases; for example, adjectives like *useful*, *necessary*, *famous*, and *respected*, which are not manner modifiers, are able to take them as well:

- (54) (a) This paper is a useful background reading.
(b) \sim This paper is useful as a background reading.
- (55) (a) Knowledge of statistics is a necessary prerequisite for this course.
(b) \sim Knowledge of statistics is necessary as a prerequisite for this course.

Hence, a role-based analysis is likely not to be fine-grained enough, as it does not distinguish between manner adjectives and such adjectives as *useful* and *necessary*, all of which intuitively seem to be predicated relative to roles. Moreover, a role-based analysis will need to provide an independent explanation for the restrictions on the type of eventualities that manner adjectives can modify, see Section 4.2. By contrast, the analysis presented in this paper straightforwardly accounts for these restrictions. Finally, a more general advantage of it compared to a role-based analysis is that it does not extend the ontology of basic semantic types by an additional type of roles, modeling roles as events in the scope of a generic quantifier.

On the other hand, manner adjectives differ from adjectives of other semantic classes insofar as they can take *in-/at*-gerunds of the following type:

- (56) (a) Peter is a careful driver.
(b) \sim Peter is careful in driving.
- (57) (a) David is a just king.
(b) \sim David is just in ruling.
- (58) (a) John is a skillful violinist.
(b) \sim John is skillful at playing the violin.

Thus, the analysis presented in this paper needs to be extended such that it accounts for the semantics of these prepositional gerunds. This is a direction for future research.

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